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SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title; APPLIED MICROBIOLOGY

Code No.: WTR 325-4

Program: WATER RESOURCES ENGINEERING TECHNOLOGY

Semester: V

Date: SEPTEMBER 1988

Author: JOHN K. THEIL

New; Revision: X (6)

APPROVED: liv^- October 4, 1988

Chairperson Date

CALENDAR DESCRIPTION

MICROBIOLOGY OF WASTEWATERS	WTR 325-4
Course Name	Course Number

PHILOSOPHY/GOALS;

To acquaint students with the fundamentals of microbiology and practical implementation of microbiological principles with respect to environmental significance, water quality assessment and wastewater treatment requirements.

METHOD OF ASSESSMENT (GRADING METHOD);

Laboratory Work/Assignments	30%
Interim Examinations 2 @ 20%	40%
Final Examination	30%

GRADING;

A passing grade will be based on a composite grading of 60%. Students obtaining a composite grading of 55 to 59% may be allowed to complete a supplementary examination.

A+ 90-100% A 80-89% B 70-79% C 60-69%

TEXTBOOK(S);

McKane, Larry and Judy Kandel; Microbiology, Essentials and Applications; McGraw-Hill Book Company.

REFERENCE TEXT;

Pelczar, Jr., M J.; R.D. Reid and E.C.S. Chan, Microbiology- Fifth Edition; McGraw-Hill Book Company. *Q?.HI2 .P^f 19^^*

OBJECTIVES;

The student will be able to:

1. Determine the basic requirements and procedures for microscopic observations of microorganisms.
2. Demonstrate the presence of microorganisms in the air and on various surfaces.
3. Identify microorganisms of importance in water quality and wastewater treatment applications.
4. Isolate individual bacteria cultures by streak plate separation.
5. Prepare and examine microscopically hanging drop and temporary wet mount specimens.
6. Observe size differences and shapes of bacteria.
7. Distinguish mobility of bacteria and observe mobility of algae and protozoa.
8. Perform microscopic observation of protozoa and determine relative predominence of the various clases of protozoa in mixed liquor of an activated sludge plant.
9. Observe algae and cyanobacteria for the purposes of classification and identification, and to describe the organisms with respect to importance in surface waters.
10. Carry out mycological culture techniques and identify structural components of fungi.
11. Carry out staining procedures.
12. Prepare culture media, and perform sterilization and media innoculation.
13. Perform the pour-plate and membrance filtration techniques.

COURSE OUTLINE

UNIT	TOPIC	HOURS
1	Microbes in the Environment Microbial Activities Microbes and Human Disease	4
2	Eucaryotes and Procaryotes	3
3	Microscopic Observations	2
4	Distribution and Biological Activities of Protozoa Classification of Protozoa Protozoan Diseases	3
5	Identification/Classification of Algae Algae in Water Supplies	2
6	Morphology/Classification of Fungi Diseases Caused by Fungi	3
7	Microbiologic Stains Morphology of Bacteria Cell Structure	4
8	Classification of Procaryotes	2
9	Bacterial Growth/Reproduction Culture Media Culture/Identification Techniques Measuring Microbial Concentration	3
10	Control of Microorganisms	2
11	Principles of Epidemiology	3
		31
Laboratory Experiments		18
Interim Tests		3
Review		2